

Remarks

In this Response, claims 1-16 are canceled, without prejudice; and claims 17-43 are added. These added claims are fully supported by the originally filed application. No new matter is added.

Claims 17-43 are presented for examination.

Rejections under 35 U.S.C. § 103

Claims 1-8 and 10-16 were rejected under 35 USC 103 over the following articles in various combinations: Wang et al. (US 6834326) (hereinafter “Wang”); Anderson et al. (*Serverless Network File Systems*) (hereinafter “Anderson”); Kim et al. (*Internet Multicast Provisioning Issues for Hierarchical Architecture*) (hereinafter “Kim”); Lin et al. (*RMPT: A reliable Multicast Transport Protocol*) (hereinafter “Lin”). While the Applicants disagree with these rejections, the Applicants have nevertheless cancelled these claims, without prejudice, in order to advance prosecution of the newly presented claims. The cancellation of these claims renders these rejections moot.

Added claims

The Applicants have taken this opportunity to add claims 17-43. None of the cited references teach or make obvious these claims. For example, none of the references, alone or in combination, teach or imply a storage appliance’s controller determining that a multicast data access command pertains to the appliance’s RA partition based at least in part on a plurality of characteristics of an RA group that are defined in the appliance’s root partition as recited in claim 17. For another example, none of the references, alone or in combination, teach or imply providing a root partition associated with an RA group and an RA partition based at least in part on one or more commands received via a network interface as recited in claim 28.

As described in the Applicants’ specification, most of the cost and complexity of prior art RA structures, e.g., RAID structures, is due to the requirements of a centralized RAID controller. In the prior art, typically, it is the centralized RAID controller that determines which data is stored on each of the discs and sends that particular data to

that particular disc. The Applicants have addressed these challenges by disaggregating some of the functions of the traditional RAID controller to separate controllers that reside in separate storage appliances. The Applicants have discovered that providing a root partition on a storage appliance, which also has one of the RA partitions, will allow the controller on that appliance to receive a multicast transmission and determine whether the access command in the transmission pertains to the resident RA partition or not. This may facilitate true offloading of centralized RA control functions to disaggregated controllers.

Wang fails to teach or make obvious the above discussed recitations of claim 17. Wang, at best, teaches the use of an intelligent switch as a RAID controller. While there may be multiple levels of RAID controllers in this reference, it is clear that it is the switch, and not the storage appliance that makes the decisions as to which commands pertain to which storage units. That is, the intelligent switches of Wang act in the same roles as traditional centralized RAID controllers. Accordingly, Wang fails to teach or imply having a root partition and an RA partition on storage appliance, with the appliance's controller determining whether a multicast command pertains to its RA partition based on RA group characteristics defined in the root partition.

Anderson also fails to teach or make obvious the above-discussed recitations of claim 17. Anderson, at best, teaches a serverless network file system. While Anderson does teach that each machine may act as a client, storage server, cleaner and manager, it is clear that the appropriate recipient of a data access command is determined by the requesting device. See, e.g., page 11, lines 21 - 24. "When a client writes a segment to a group it...uses the map's list of storage servers to send the data to the correct machines." Using the maps to determine where the data is going is similar to a traditional RAID controller and inconsistent with the recitations above, e.g., an appliance's controller determining whether a multicast command pertains to the appliance's RA partition based at least in part on the definitions in the root partition.

Furthermore, Anderson also fails to teach or make obvious the above-discussed recitations of claim 28. For example, there are no teachings in Anderson that can be relied upon to teach or imply that a root partition, associated with the RA group, and an

RA partition are provided based at least in part on one or more commands received via a network interface. As discussed in the specification, a host may dynamically create an RA group by issuing commands to various appliances to provide root partitions and the RA partitions. The controllers of the various appliances may then be able to respond appropriately to data access commands multicast from the host without the host having to individually address the data access commands. Because Anderson fails to teach or imply a similar partition provision procedure, it fails to teach or make this claim obvious.

Kim also fails to teach or make obvious the above-discussed recitations of claim 17 and 28. Kim was relied upon for teachings related to split-ID packets. These recitations are not in the pending claims. Therefore, the relied upon teachings of Kim are no longer relevant.

Lin also fails to teach or make obvious the above-discussed recitations of claim 17 and 28. Lin was relied upon for teachings related to a map of incomplete writes. These recitations are not in the pending claims. Therefore, the relied upon teachings of Lin are no longer relevant.

The remaining claims, e.g., claims 18 – 27, and 29 – 43, include recitations similar to the above-discussed recitations of claim 17 and/or 28 (as well as additional recitations). Therefore, these claims are also patentable over the cited references for at least the reasons given above, and for the additional recitations.

Conclusion

For these reasons, a Notice of Allowance, allowing claims 17-43, is respectfully requested. If the Examiner has any questions concerning the present paper, the Examiner is kindly requested to contact the undersigned at 503-796-2972. If any fees are due in connection with filing this paper, the Commissioner is authorized to charge Deposit Account No. 500393.

Respectfully submitted,
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